

NON-PUBLIC?: N
ACCESSION #: 8910040297
LICENSEE EVENT REPORT (LER)

FACILITY NAME: South Texas, Unit 2 PAGE: 1 OF 3

DOCKET NUMBER: 05000499

TITLE: Reactor Trip Due to a Simultaneous Trip of Three
EVENT DATE: 08/29/89 LER #: 89-020-000 REPORT DATE: 09/29/89

OPERATING MODE: 1 POWER LEVEL: 100

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR
SECTION
50.73(a)(2)(iv)

LICENSEE CONTACT FOR THIS LER:
NAME: Charles Ayala -Supervising Engineer TELEPHONE: 512-972-8628

COMPONENT FAILURE DESCRIPTION:
CAUSE: SYSTEM: COMPONENT: MANUFACTURER:
REPORTABLE NPRDS:

SUPPLEMENTAL REPORT EXPECTED: NO

ABSTRACT:

On August 29, 1989, Unit 2 was in Mode 1 at 100 percent power. At 1400 hours all three operating turbine driven feedwater pumps tripped. The licensed control room operator immediately tripped the reactor in anticipation of low steam generator level. An auxiliary feedwater actuation subsequently occurred on low steam generator level. The unit was stabilized in Mode 3 with no unexpected post-trip transients. The cause of this event was a momentary interruption of control power to the feedwater pump overspeed protection circuits due to the failure of an inverter. A contributing cause was the design of the feedwater pump overspeed protection circuits which could not tolerate the momentary loss of control power without tripping the pumps. The inverter has been repaired and returned to service. The design of the feedwater pump overspeed protection has been modified to an "energize to trip" scheme on Unit 2 and will be modified on Unit 1 prior to startup from the first refueling outage.

END OF ABSTRACT

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DESCRIPTION OF EVENT:

On August 29, 1989, Unit 2 was in Mode 1 at 100 percent power. At 1400 hours all three operating turbine driven feedwater pumps tripped. The licensed reactor operator immediately tripped the reactor in anticipation of low steam generator level. An auxiliary feedwater actuation subsequently occurred on low steam generator level. The unit was stabilized in Mode 3 with no unexpected post-trip transients.

It was subsequently determined that the feedwater pumps tripped on overspeed following a momentary interruption of control power from an inverter. The overspeed protection circuitry was designed to fail to the tripped condition on loss of control power. This protection circuitry had been added as a result of a destructive feedwater pump turbine overspeed which occurred on Unit 1 on May 25, 1988.

The interruption in power from the inverter has been attributed to a component failure in the static transfer switch circuit. The failed circuit cards have been replaced and the inverter has been returned to service.

CAUSE OF EVENT:

The cause of this event was a failure in the static transfer switch circuit of the inverter which feeds the local control panels for the steam generator feedwater pumps. A contributing cause was the design of the feedwater pump overspeed protection circuit which could not tolerate the momentary loss of control power without tripping the pumps.

ANALYSIS OF EVENT:

Reactor trip and Engineered Safety Features actuation is reportable pursuant to 10CFR50.73(a)(2)(iv). The plant was brought to a stable condition in Mode 3 with no unexpected post-trip transients. No safety injection actuation occurred as a result of this event.

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CORRECTIVE ACTION:

The following corrective actions are being taken as a result of this event:

1. The inverter has been repaired and returned to service.

2. The steam generator feedwater pump overspeed protection circuitry has been changed to an "energize to trip" scheme, on Unit 2 and will be changed on Unit 1 prior to startup from the first refueling outage. This will prevent momentary losses of control power from tripping all operating feedwater pumps.

ADDITIONAL INFORMATION:

There have been no previous events reported regarding reactor trips due to a failed inverter.

Overspeed protection for the feedpump turbines is not jeopardized in the event of a loss of power, in that there is a mechanical overspeed trip for the feedpump turbines that does not require any power source. In addition, loss of the electrical bus feeding the feedpump turbine electrical overspeed trip also results in a loss of control power which causes the feedpump turbine control valves to go closed.

ATTACHMENT 1 TO 8910040297 PAGE 1 OF 2

THE LIGHT
COMPANY
Houston Lighting & Power

P.O. Box 1700 Houston, Texas 77001 (713) 228-9211

September 29, 1989
ST-HL-AE-3248
File No.: G26
10CFR50.73

U.S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, DC 20555

South Texas Project Electric Generating Station
Unit 2
Docket No. STN 50-499
Licensee Event Report 89-020 Regarding
a Reactor Trip Due to a
Simultaneous Trip of Three Feedwater Pumps

Pursuant to 10CFR50.73, Houston Lighting & Power (HL&P) submits the attached Licensee Event Report 89-020 regarding a reactor trip due to a

simultaneous trip of three feedwater pumps. This event did not have any adverse impact on the health and safety of the public.

If you should have any questions on this matter, please contact Mr.

C.A. Ayala at (512) 972-8628.

R.W. Chewning

Vice President

Nuclear Operations

RWC/BEM/eg

Attachment: LER 89-020, South Texas, Unit 2

A Subsidiary of Houston Industries Incorporated

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Houston Lighting & Power Company

ST-HL-AE-3248

File No.: G26

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cc:

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